Nova Scotia
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Department of Natural Resources, Mineral Resources Branch

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http://www.gov.ns.ca/natr/meb/pdf/mu.htm

NOVA SCOTIA
Natural Resources

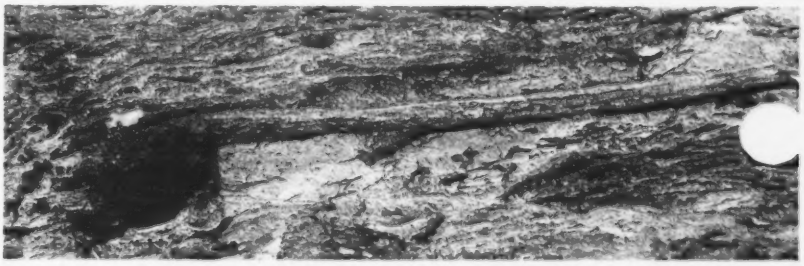
Geological Services Division Working Through Transition

The Geological Services Division is undergoing a period of change due to staff turnover and a re-evaluation of program priorities. The transition began with the retirement of Director Mike Cherry late in 2005. Senior surficial geologist Ralph Stea retired in May 2006, and senior mineral deposit geologist Dan Kontak resigned in July 2006 to take on a teaching and research position with Laurentian University in Sudbury, Ontario. In February 2007 bedrock mapper Rick Horne was granted a one-year leave of absence to work in the mineral exploration industry. The loss of these experienced geologists, however, also provides the opportunity to review the division's future programs, structure and personnel needs.

Staff losses were first addressed by re-assigning current staff: three Senior Geologist positions have been filled by John Calder (Senior Geologist in the Resource Evaluation Section), Terry Goodwin (Senior Geologist in the Geological Mapping and Environmental Geology Section), and Paul Smith (Liaison Geologist). My appointment as Director of the division created a vacancy for the position of Manager, Geological Mapping and Environmental Geology Section, which was filled by Rob Naylor. In early 2007, Brian Fisher was reclassified as Senior Geologist (GIS Supervisor) in the Geoscience Information Services Section. In October 2006 David Sun, geoscience database design specialist, was hired for a two-year period under the Career Starts Program to work in the GIS Section.

Having accomplished the reassignment of current staff, the division now has an opportunity to hire new geoscientists. At the time this article was prepared, positions for a mineral deposit geologist (Resource Evaluation Section), and a geological mapper (surficial), and hydrogeologist in the Geological Mapping and Environmental Geology Section are in the process of being filled.

Despite these changes in staff and management, and the current staff vacancies, the Geological Services Division



Unidentified (grazing burrow?) trace fossil on a metasandstone bedding plane in the Silurian White Rock Formation exposed on the Overton shore section near Yarmouth, Nova Scotia. Trace fossil discoveries like this, part of the Southwest Nova Mapping Project, have required some revision of the age and origin of the rocks of southwestern Nova Scotia. Photo by Aaron Satkoski, Acadia University.

will carry out an exciting assortment of activities this summer, including (but not limited to) the following projects.

- **Southwest Nova Mapping Project**

Chris White will continue work this summer to map the bedrock geology of the southwest portion of the province, a project that began in the late 1990s and is nearing completion. Chris will focus on the Cambrian-Ordovician and Silurian-Devonian rocks along the northern contact of the South Mountain Batholith, adjacent to the Annapolis Valley.

- **Halifax Regional Municipality (HRM) Mapping Project**

This is a new project that will target the geology of urban HRM and its surrounding regions. This multidisciplinary project will combine a wide range of geoscience and related information, including: bedrock geology, surficial geology, geochemical data (rock, soil), geophysical data (e.g. aeromagnetic, gamma-ray, digital elevation, Lidar), and geohazard assessment (acid rock drainage, radon and uranium, historical mine shafts and tailings, coastal erosion). Similar urban geology projects have been undertaken in Ottawa and Vancouver, but this will be the first comprehensive project of its type to be undertaken in Nova Scotia.

- **Tri-National (Canada, United States and Mexico) Soil Survey**

Terry Goodwin will be the lead person for DNR on a project designed to collect representative soil samples and other data, including radon-in-soil measurements. This forms an inaugural part of Canada's contribution to a project that will employ standard sampling and analytical protocols for all of North America. Terry will coordinate his efforts with representatives from Natural Resources Canada and Health Canada.

- **Coastal Erosion Project**

Phil Finck will continue to study the erosional and depositional processes that are constantly shaping the coastline of Nova Scotia. Phil will coordinate some of his efforts with DNR's Parks Division to study some of the province's beaches that are protected under the *Beaches Act*.

- **Aggregate Project**

Garth Prime will continue his work on the aggregate project, which is designed to evaluate the bedrock and surficial sources of aggregate for both domestic consumption and export markets. Garth will focus much of his attention on the Annapolis Valley and southern part of the province.

- **Mineral Resource Potential Project**

John Calder is working with staff of the GIS Section and other division geologists to prepare a series of mineral resource maps, ultimately designed to provide a mineral potential map for the province (see p. 7). The project will include information on past mining and exploration activity (shafts and pits, drillholes, claims staked), mineral occurrences (industrial and metallic), favourable geological zones including metallogenic domains as defined in previous studies, regions of the province with high potential for industrial mineral development, such as areas underlain by the Windsor Group (gypsum, anhydrite, salt, potash, barite, limestone), and potential for new aggregate developments (both bedrock and surficial).

- **GIS Projects**

The GIS section, including Brian Fisher, Jeff Poole, John MacNeil, Jeff MacKinnon and Angie Ehler, is currently working on a full complement of projects to deliver digital information to division clients. Their projects combine the digitizing of historic or legacy data (e.g. GSC map information including work by Faribault), creation of databases from current geoscience projects (e.g. Southwest Nova Mapping Project), and design of new database systems for future geoscience work.

- **Mineral Occurrence Database Project**

George O'Reilly will continue his work to maintain and revise a database of current mineral occurrences for the province. George will work closely with David Sun to convert the current FoxPro database to SQL Server, and make the data available to clients via the Mineral Resources Branch website.

- **Economic Development Project**

Garth Demont continues to work closely with outside groups and agencies, including the Office of Economic Development, Regional Development Agencies, local universities and research organizations, and municipal and community groups, to explore mineral-related development opportunities. Garth's work has recently focused on a wide range of opportunities including: tourism related to geological resources (e.g. Peggys Cove granites, fossil sites throughout the province), secondary processing of minerals such as carbonate deposits on Cape Breton Island (e.g. cement, lime, fillers), and dimension stone (e.g. sandstone, marble, slate). In addition, Garth continues to make presentations to groups throughout the province pertaining to the importance of geoscience research, and the interaction of geology and geological resources with society.

- **Uranium and Radon Project**

George O'Reilly and Bob Ryan continue to document the geological setting of uranium deposits in Nova Scotia. This work provides context to the distribution and environmental implications of uranium and radon.

- **Prospector Assistance Project**

Ron Mills continues to assist Nova Scotia prospectors with advice on exploration and analytical techniques, and interpretation of geological, geochemical and geophysical data.

- **Mineral Deposits Project**

It is anticipated that the new mineral deposit geologist, as part of his or her orientation to the division, will monitor mining activities at the re-activated Gays River lead-zinc mine (see article p. 3). Mining activities commenced in April 2007 with the first-ever open pit extraction of ore from the carbonate-hosted deposit. This activity will provide an excellent opportunity to view new exposures of the ore zone.

- **Groundwater Assessment Project**

The Nova Scotia Department of Natural Resources and the Department of Environment and Labour have been working together to improve our understanding of the province's groundwater resources. As part of this process, the Geological Services Division has agreed to hire a hydrogeologist to take the lead in groundwater resource assessment for the Province of Nova Scotia.

Mike MacDonald

Scotia Mine Puts Province Back in the Metals Business

Over 30 years since its discovery, the stars have finally aligned for the Gays River zinc-lead deposit and its operators ScoZinc Ltd., a wholly owned subsidiary of Acadian Gold Corporation. Open-pit operations to remove low-grade ore at the Scotia Mine (Fig. 1) began on April 27, 2007. The factors that have come together to bring the mine into production include: low world reserves and climbing prices for zinc, driven in large part by industrial growth in China; a change in mining strategy from underground to open-pit methods; and a home-grown mining company that recognized a great opportunity.

The Scotia Mine deposit has long been considered a Mississippi Valley-type (MVT) lead-zinc deposit. Characteristics of sedimentary formations that host MVT lead-zinc deposits include shallow-water, shelf-type carbonate rocks with reefs around the peripheries of intracratonic basins, karst structures, limestone-dolomite interfaces, and proximity to a major hydrocarbon-bearing basin.

Ore at the Scotia Mine was formed at higher temperatures than most North American MVT deposits, and compares more favourably with the epigenetic MVT deposits of the Central Ireland Basin. The Irish deposits also occur in Carboniferous carbonate rocks and are associated with faults, which are thought to have acted as conduits for mineralizing hydrothermal fluids.

The high-grade Zn-Pb deposit at the Scotia Mine consists of a massive sulphide zone in contact with either gypsum/anhydrite or Cretaceous infill sediments, ranging in thickness from 0.1 to 5.0 m and locally containing up to 78% Pb and 57% Zn. Sphalerite and galena are the main sulphide minerals. On the footwall of the massive sulphide zone, there is a zone of disseminated ore (>7% Zn equivalent) that is locally up to 12 m in thickness. Locally disseminated ore (>2% Zn equivalent) extends ~20 m into the footwall. Table 1 provides a summary of resources at the mine. Sphalerite and galena constitute about 99.5% of the metallic minerals. Other sulphides include marcasite, pyrite and chalcopyrite, while gangue minerals include calcite, dolomite, fluorite, barite and selenite.

Figure 1. *Air photo of the Scotia Mine and mill, near Gays River, Halifax County.*

Table 1. *Resource summary for the Scotia Mine (0.75% zinc-equivalent cutoff grade; from Acadian Gold Corporation web site).*

Category		Volume (m^3)	SG	Tonnes	Zinc Grade	Lead Grade
Measured (Surface)		680,000	2.78	1,880,000	3.8%	1.6%
Indicated	Surface	810,000	2.77	2,250,000	3.2%	1.4%
	Underground[1]	381,000	2.90	1,110,000	6.6%	3.7%
	Subtotal	1,190,000	2.82	3,360,000	4.3%	2.2%
Measured + Indicated[2] (Surface and Underground)		**1,870,000**	**2.80**	**5,240,000**	**4.1%**	**2.0%**
Inferred		652,000	2.76	1,800,000	3.1%	1.1%

Notes:
1. Northeast Underground Zone. 2. Undiluted Resources.

The distribution of ore in the Scotia Mine is essentially controlled by a sinuous, ancient coastline. The main part of the deposit is shallow (<150 m deep), has a dip length of approximately 100 m, and a strike length following the ancient coastline over a straight-line distance of 2 km.

Acadian Gold Corporation was founded by Will Felderhof. Other officers of the company include Vice-president Terry Coughlan, Jr. and Chief Operating Officer Bill Rogers. The Scotia Mine is expected to process 700 000 tonnes of ore per year, yielding 30 000 tonnes of low-iron zinc concentrate and 10 000 tonnes of lead concentrate from its refurbished mill. Start-up at the site involved 40 contractors and 60 employees, a number that is expected to grow as mining and milling operations proceed. Revenues from the Scotia Mine will assist Acadian Gold's efforts to bring their Nova Scotia gold and barite properties into production. Good things come to those who wait!

John Calder and Paul Smith

Branch Promotes Exploration at Roundup and PDAC

Mineral Exploration Roundup

The 2007 Mineral Exploration Roundup (January 28-31) in Vancouver, hosted by the Association for Mineral Exploration British Columbia, proved to be the most successful to date. Some of this year's highlights included: (1) record attendance, with more than 6,000 participants from 30 countries, (2) unprecedented media coverage, (3) short courses and special events that were all sold out well in advance and (4) addition of the highly successful Map Tent and Field Trips.

Executive Director of the Mineral Resources Branch Scott Swinden and Liaison Geologist Paul Smith manned a booth for two days to highlight both exploration and development activities in Nova Scotia. The display presented a geological overview of the province, focusing on gold, base metals, polymetallic deposits and rare metals. Technical and promotional materials were distributed to more than 200 interested clients. The event was so successful in 2007 that the branch has requested booth space for the full four days next year.

In addition to Roundup 2007, a number of one-on-one visits were made to corporate head offices in downtown Vancouver prior to the conference to distribute technical information on Nova Scotia's mineral deposits and to answer questions related to the province's mineral industry. This effort was made to increase the potential for exploration and development activity in the province through a combination of individual meetings with these Vancouver-based companies and through subsequent discussions with technical staff visiting the branch's booth at the conference.

PDAC

The International Convention, Trade Show and Investors Exchange of the Prospectors and Developers Association of Canada (PDAC) broke all previous attendance records at its 75th conference in Toronto (March 4-7), with 17,600 attendees from over 100 countries. President of the PDAC Patrica Dillon hailed the conference as a tremendous success, noted that the mineral industry has the highest use of technology of any sector in the world, and emphasised the high level of education currently required in the industry. She also noted that over the next 10-15 years approximately 40% of mineral industry personal will retire. This will lead to incredible job opportunities for highly skilled and well educated young people.

This year, the Mineral Resources Branch sent a delegation of five staff to promote mineral resource opportunities in the province. DNR had excellent visibility in the Atlantic Rock Room, along with representatives from New Brunswick and Newfoundland and Labrador. Over the course of the conference thousands of attendees passed through the booth space and an estimated 500 stopped to pick up technical information on mineral properties, have questions relating to the mining and mineral sectors answered, or talk about opportunities throughout the region.

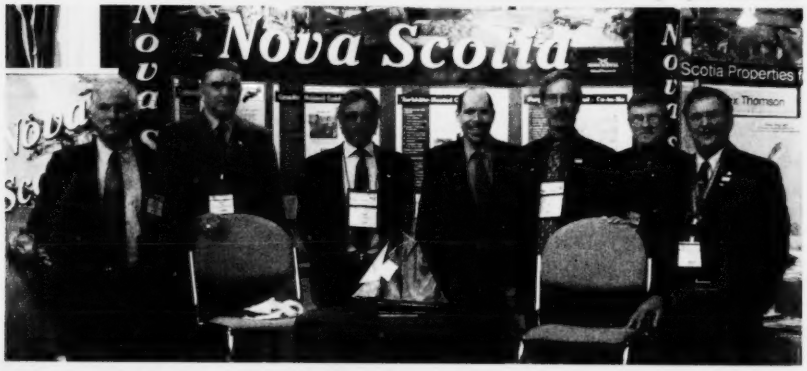
Due to the recognized importance of prospectors to the prosperity of the mining and mineral sectors of the province, DNR offered financial assistance to eleven prospectors to attend this year's PDAC conference. Booth space was offered to Nova Scotia prospectors to display their materials. At the end of the conference, all of the prospectors reported having one of their best shows ever and offered glowing compliments to staff of the branch for their assistance. Much of this praise can be directed to Ron Mills, who worked closely with prospectors to either compile or construct consistent, high-quality display materials.

It was a pleasure to have Minister of Natural Resources David Morse and Deputy Minister Peter Underwood attend the conference and witness the array of opportunities that the mining industry has to offer. The mining industry is poised to have a major impact on the sustainable growth of Nova Scotia's economy, and the industry is also taking a lead role in environmental and social responsibility. The mining industry operates under the most stringent environmental regulations of any provincial sector and continues to adhere to its 'best practice' obligations.

While in Toronto, Minister Morse met with several senior executives from companies currently active in Nova Scotia to discuss environmental, corporate and social issues associated with their exploration and development work and to look at additional opportunities. The Minister also hosted the Annual Nova Scotia Industry Breakfast in the Confederation Room of the Royal York Hotel. With a near capacity crowd, those in attendance included a cross section from the metals exploration, promotion and mining sectors, the investment sector, the Coal Association of Canada, and the aboriginal community from across Nova Scotia and other parts of Canada.

We look forward to next year's PDAC, to be held from March 2-5, 2008.

Paul Smith



DNR representatives (L to R) Rick Ratcliffe, Don Weir, Peter Underwood, David Morse, Scott Swinden, Paul Smith and Mike MacDonald at PDAC 2007.

From The Mineral Inventory Files

More Barite at Middle Stewiacke?

A small deposit of very white barite ($BaSO_4$) that may have the potential to supply one of several niche markets for this mineral is found near Middle Stewiacke, Colchester County (Fig. 1). The deposit is accessible by travelling 700 m north along a woods road from Highway #289, from a point 3.4 km west of the main intersection in the village of Middle Stewiacke. First mention of barite at this location was in H. How's *The mineralogy of Nova Scotia, a report for the provincial government* in 1869. At that time, 1,200 tons of barite were removed via a 12 m deep shaft. The property was inactive until the 1890s when an open cut was excavated (Fig. 1) and a small quantity of barite was removed. The effort produced very bright white barite suitable for manufacturing paint. Only the most pure barite was shipped, while the remaining off-white barite was discarded on site. This explains the abundance of crystalline, white-grey barite remaining (Fig. 1).

The property was abandoned shortly after the activity in the 1890s and remained inactive until 1945 when Maritime Exploration Limited determined by prospecting that barite float is found up to 2 km to the west of the old open cut. It is possible that the float may actually be debris that fell from transport wagons during the old mining operation, but this has never been resolved.

Diamond-drilling from 1945 to 1948 showed that the rocks hosting the barite are faulted, and that faults played a key role in formation of the barite deposit. The host rock for most of the barite is massive limestone and fragmental limestone of the Early Carboniferous Macumber Formation (basal unit of the Windsor Group) near its faulted contact with Horton Group sandstone and conglomerate. Barite occurs as vein-like pods and lenses of massive white barite in the order of 5 m long by 1 m thick replacing the host limestone. The barite is mostly white or off-white, but grey, orange, brownish and translucent varieties also occur. Associated minerals include hematite, limonite, graphite and veins of red and green calcite. Although the style of mineralization suggests a potential for base-metal sulphides, no significant sulphides were observed in bedrock, diamond-drill core or the extensive float covering the area.

Visitors to the property will be impressed by the quantity and quality of barite in plain sight. If this is reject ore, then the ore that was shipped from the site must truly have been high quality. Most of the modern exploration attention at this property was concerned with its base metal potential while its potential as a source of high quality barite is defined solely by the late 19th century work done there. It is entirely possible that a deposit of high quality, pharmaceutical grade barite lies there waiting for those willing to expend the time and resources to locate and develop it.

G. A. O'Reilly

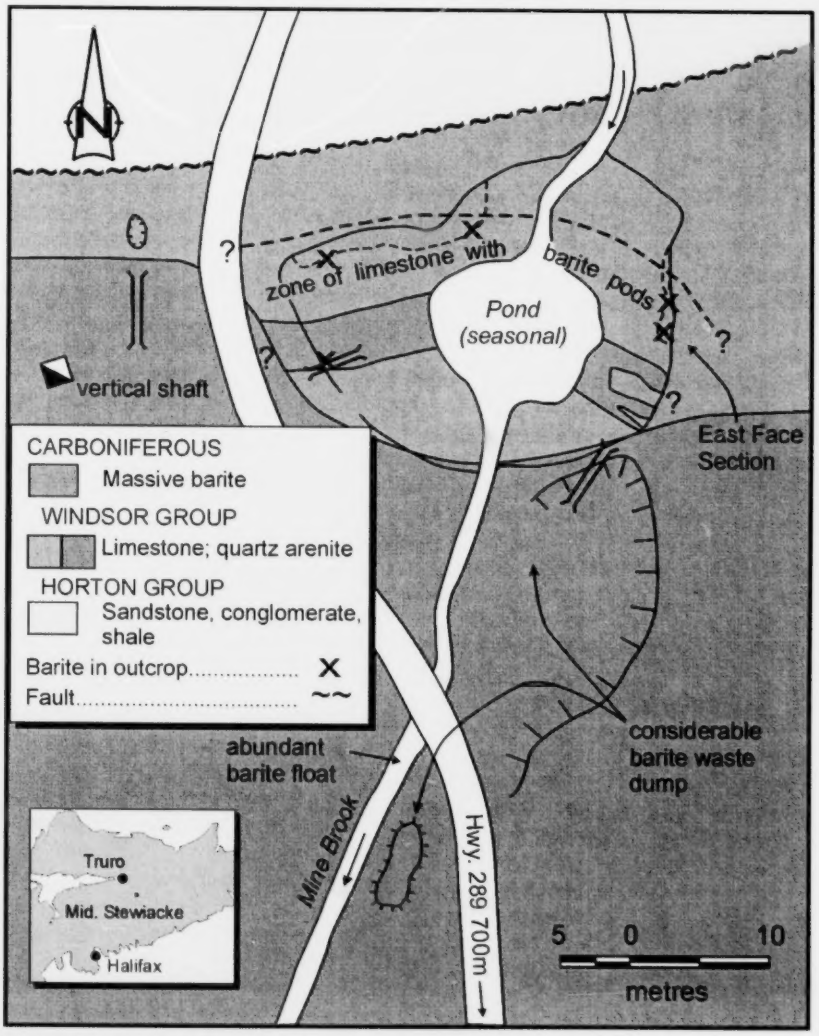


Figure 1. *Local geology of the former Middle Stewiacke barite mine.*

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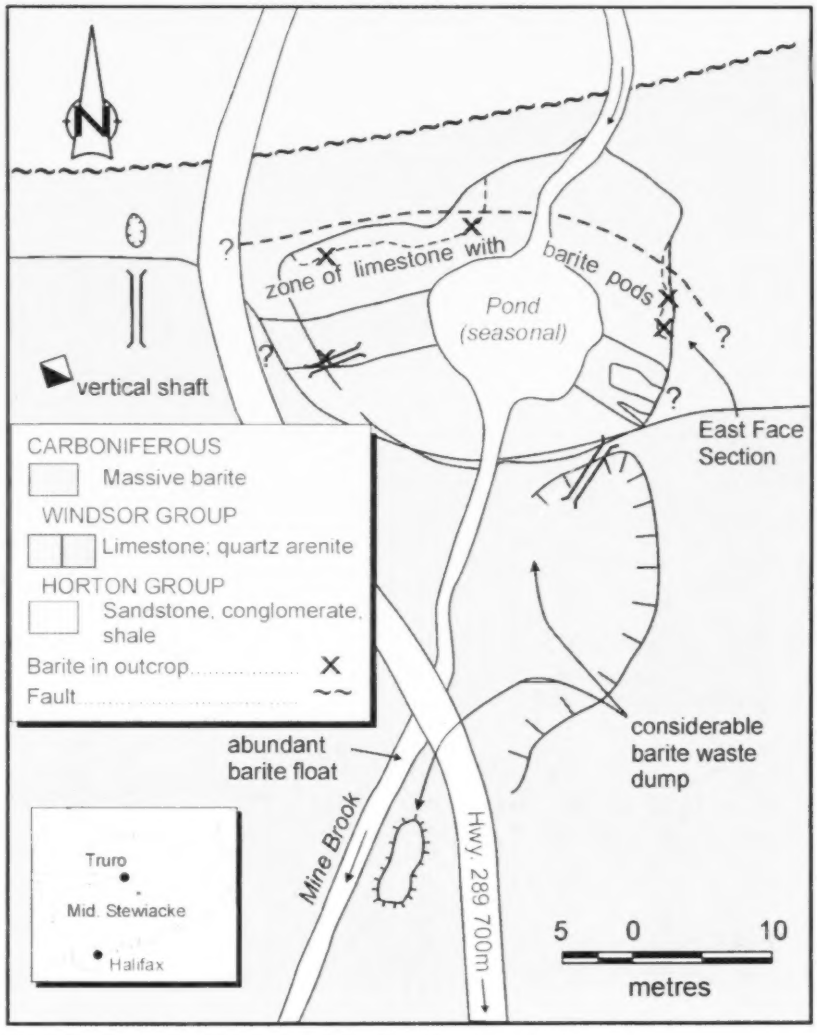


Figure 1. *Local geology of the former Middle Stewiacke barite mine.*

Branch Moves Toward Online Assessment Reports

Mineral exploration assessment reports submitted to the Nova Scotia Department of Natural Resources (DNR) are held confidential for two years from their date of submission. After the confidentiality period has expired, the assessment reports are publicly released in hard copy for consultation and use in the DNR Library in Halifax and in the DNR Core Library in Stellarton. Assessment reports are publicly released on the first working day of each month throughout the year. A quarterly list of newly released assessment reports is provided in this newsletter (see column on the right).

Beginning in January 2007, the newly released assessment reports were scanned and full-text Adobe® portable document files (.pdf) were made available for public viewing and download on the Mineral Resources Branch web site at http://www.gov.ns.ca/natr/meb/download/ar_tcyear.htm. The files are derived by scanning the entire original hard copy of each assessment report. The scanning of assessment reports released prior to 2007 will continue until all of the assessment reports and property reports held by the Mineral Resources Branch have been scanned and made available on the branch web site.

Microfiche copies of assessment reports and property reports publicly released up to the end of 2006 are also available for consultation in the DNR Library in Halifax, in the DNR Core Library in Stellarton, and through DNR's Regional Geologists in their offices in Bridgewater, Truro and Coxheath. Microfiche copies and hard copies (printed from microfiche) of these assessment reports and property reports can be purchased directly from Precision Document Management, 6370 Forrester Street, Halifax, Nova Scotia, B3K 2V5 (phone: 902-442-4142; contact: Peter Galbraith pgalbraith@precisionatlantic.com.)

All assessment reports and property reports, along with all Mineral Resources Branch (MRB) geoscience publications, maps, open files, contribution series and university theses on the geoscience of Nova Scotia, have been geologically indexed and entered into NovaScan, the database for geoscience publications and maps related to Nova Scotia. NovaScan can be accessed at http://www.gov.ns.ca/natr/meb/pubs/pubshome.htm#pubdb.

NovaScan is updated monthly as newly released assessment reports, property reports and MRB geoscience information becomes available. Any NovaScan search that includes assessment reports in the results will contain an active link from the assessment report record directly to the full-text .pdf of that report (assuming that these assessment reports have been scanned and posted to the branch web site).

Norman Lyttle

January - March 2007 Open Assessment Reports

Report Number	NTS	Licensee
AR ME 2005-001	11E/04B	Richardson, G
AR ME 2005-002	21H/01D	Hudgins, A D
AR ME 2005-004	11E/06D	Hudgins, A D; Cobequid Gold
	11E/07C	Corporation Limited; Avalon Ventures
	11E/10B	Limited
	11E/11A	
AR ME 2005-005	11E/06D	Grant, S
	11E/11A	
AR ME 2005-007	11F/14B	MacKinnon, R P
AR ME 2005-008	11D/16C	Oicle, G
AR ME 2005-009	11D/16C	Oicle, G
AR ME 2005-012	11E/01D	Grant, S
	11E/08A	
	11F/05B	
AR ME 2005-013	11K/01C, D	Cape Crushing Company Limited
AR ME 2005-016	11F/15A	Prochnau, J F
AR ME 2005-017	11E/02D	Grant, S
AR ME 2005-018	11E/05D	Allen, L J
AR ME 2005-019	11D/14C	DeBay, A
AR ME 2005-020	11F/05A	Schenkels, H F
	11F/06B	
AR ME 2005-021	11D/14C	MacHardy, J
AR ME 2005-022	11F/05A, B	Acadian Gold Corporation
AR ME 2005-023	11D/16C	H and E Mullen Investments Limited
AR ME 2005-024	11D/16C	Jewers, J M
AR ME 2005-025	11D/15A	Acadian Gold Corporation
AR ME 2005-026	11D/15A	Acadian Gold Corporation
AR ME 2005-027	11D/15A	Acadian Gold Corporation
AR ME 2005-028	21A/16B	Barrett, A M
AR ME 2005-030	11E/02D	Cramm, D
AR ME 2005-032	11F/05B	Acadian Gold Corporation
AR ME 2005-033	21A/09B	Metcalf, T
AR ME 2005-035	11E/01A, D	Acadian Gold Corporation

Susan Saunders and Norman Lyttle

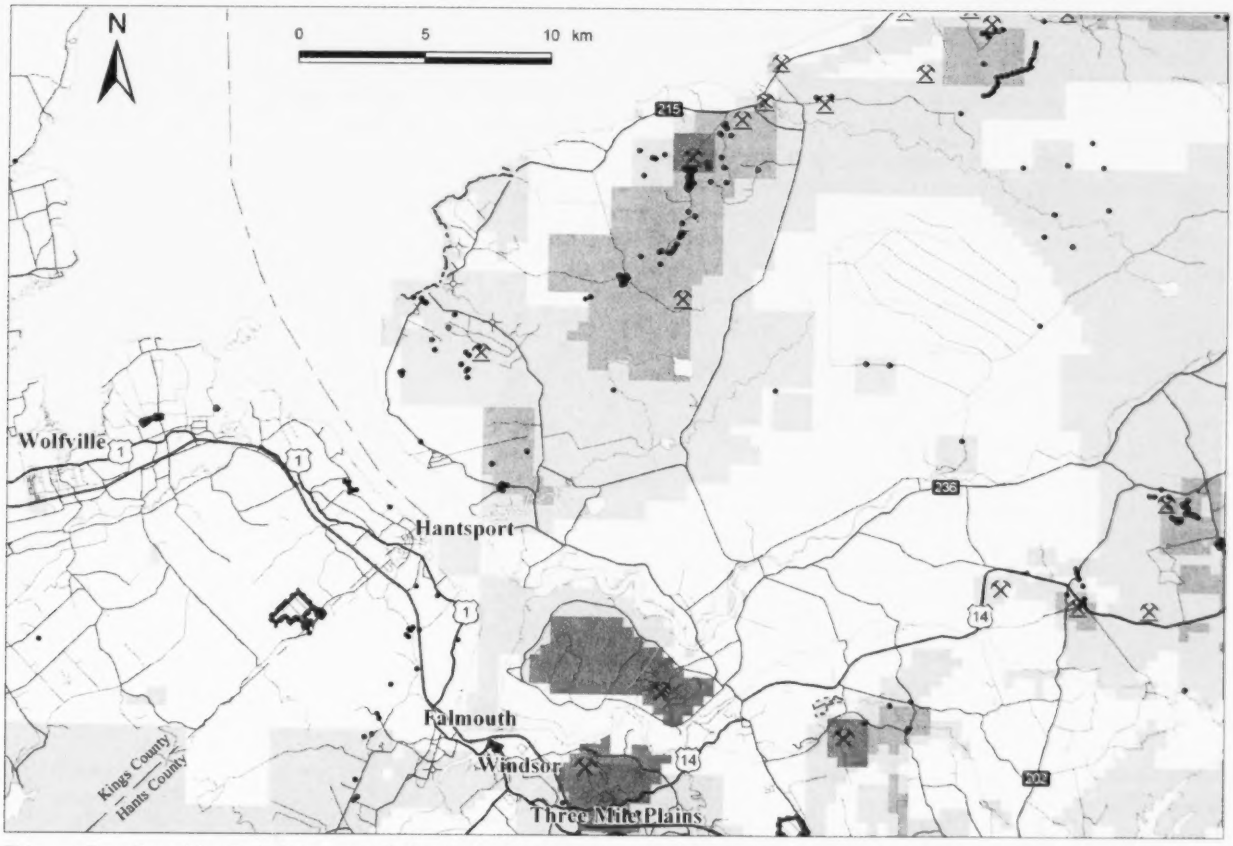
Mineral Resource Maps: a New Tool for Land Management

Integrated Resource Management (IRM) and land-use planning must balance the values of forest and mineral resources with other values, including biodiversity, parks and protected areas. Accurate representation of the province's mineral resources, however, is a substantial challenge as they are largely hidden beneath a cover of soil, till and vegetation. The Geological Services Division has initiated a project (see p. 2) to develop a series of mineral resource maps that will ultimately lead to the preparation of mineral resource potential maps for Nova Scotia. These maps will be used by division staff, Regional Geologists and clients for IRM decisions and other land-use issues in the future.

The first in a series of GIS-based maps is now ready for internal review. Prepared by Angelina Ehler of the Geoscience Information Services Section under the guidance of Brian Fisher, the first map series focuses on exploration and mining data, providing a factual record of mineral development activity. The compilation draws on data from claim staking, diamond drilling, mining permits and leases, and past mining operations. Claim staking data are shaded proportionally to reflect the intensity of staking activity from 1987-2006, and reveal geological trends of economic interest, strengthened by the other data sets. A supplementary data set of pre-moratorium uranium staking covers the years 1949-1982. For display purposes, the province has been divided into a series of four overlapping sheets at a scale of 1:250 000.

A second map series will focus on defining mineral resource potential based on mineral occurrences, geological formations and highly prospective zones. Mineral development is an important economic activity in Nova Scotia, with more than 5,000 people currently employed directly and indirectly. The sustainability of this industry depends on access to land in order to identify future resources. Land-use decisions, especially for areas of the province with high mineral potential, are critical for mineral development. It is hoped that mineral resource maps will play an important role in providing the information needed for responsible land management.

John Calder, Mike MacDonald, Angie Ehler and Brian Fisher



This small portion of the first-phase compilation highlights the area around Windsor, Nova Scotia. Areas that have been staked for mineral exploration in the past 20 years are shaded: the deeper the shading the more years the area has been held under exploration licence. Also plotted are the many active and former mines in the area. Black dots show the locations of drillholes.

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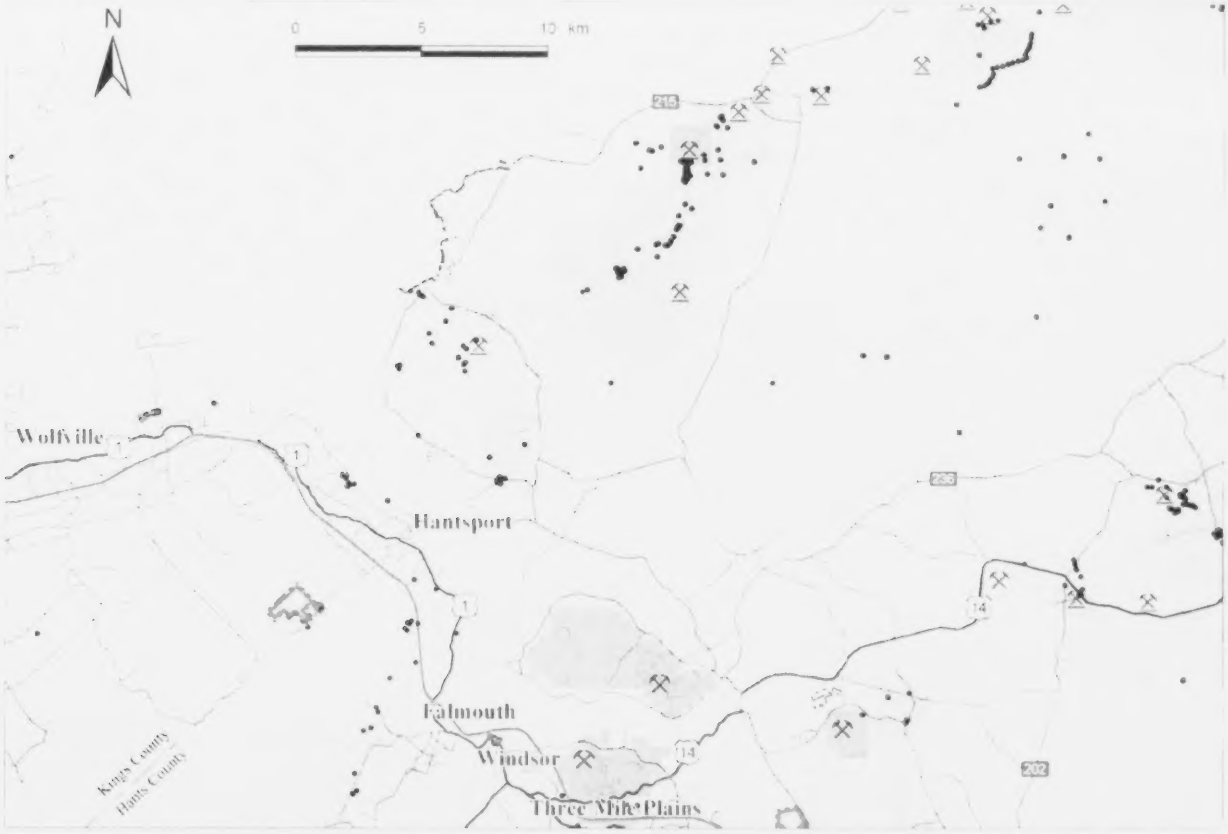
Integrated Resource Management (IRM) and land-use planning must balance the values of forest and mineral resources with other values, including biodiversity, parks and protected areas. Accurate representation of the province's mineral resources, however, is a substantial challenge as they are largely hidden beneath a cover of soil, till and vegetation. The Geological Services Division has initiated a project (see p. 2) to develop a series of mineral resource maps that will ultimately lead to the preparation of mineral resource potential maps for Nova Scotia. These maps will be used by division staff, Regional Geologists and clients for IRM decisions and other land-use issues in the future.

The first in a series of GIS-based maps is now ready for internal review. Prepared by Angelina Ehler of the Geoscience Information Services Section under the guidance of Brian Fisher, the first map series focuses on exploration and mining data, providing a factual record of mineral development activity. The compilation draws on data from claim staking, diamond drilling, mining permits and leases, and past mining operations. Claim staking data are shaded proportionally to reflect the intensity of staking activity from 1987-2006, and reveal geological trends of economic interest, strengthened by the other data sets. A supplementary data set of pre-moratorium uranium staking covers the years 1949-1982. For display purposes, the province has been divided into a series of four overlapping sheets at a scale of 1:250 000.

A second map series will focus on defining mineral resource potential based on mineral occurrences, geological formations and highly prospective zones. Mineral development is an important economic activity in Nova Scotia, with more than 5,000 people currently employed directly and indirectly. The sustainability of this industry depends on access to land in order to identify future resources. Land-use decisions, especially for areas of the province with high mineral potential, are critical for mineral development. It is hoped that mineral resource maps will play an important role in providing the information needed for responsible land management.

John Calder, Mike MacDonald, Angie Ehler and Brian Fisher



This small portion of the first-phase compilation highlights the area around Windsor, Nova Scotia. Areas that have been staked for mineral exploration in the past 20 years are shaded; the deeper the shading the more years the area has been held under exploration licence. Also plotted are the many active and former mines in the area. Black dots show the locations of drillholes.

Radon in Nova Scotia: Should We Worry?

Radon is an odourless, colourless and tasteless gas that is produced by the natural radioactive decay of uranium. Although radon is chemically inert, it is considered dangerous because it emits potentially harmful alpha radiation (a type of radiation consisting of particles emitted from an atomic nucleus, rather than electromagnetic energy). Uranium and radon occur naturally and are commonly found in all rock types, although some rocks like granite and certain sedimentary rocks are known to have higher concentrations of these elements than others.

The alpha radiation that is emitted does not penetrate skin, but radon can enter the body through inhalation. Once in the lung, the short-lived daughter products of radon attach to the bronchial airway. Increased long-term exposure to elevated levels of radon has been linked to increased lung cancer rates. In North America, long-term exposure to high levels of radon is the second highest cause of lung cancer next to smoking, and the leading cause of lung cancer among non-smokers.

Health Canada has recently proposed reducing the current guideline for exposure to radon from 800 Bq/m^3 (800 Becquerels per cubic metre) to 200 Bq/m^3 for an annual average exposure. A Becquerel is a measure of radioactivity, the disintegration of one radioactive atom per second. This new level is comparable to other industrialized countries and is within the recommended limits of the World Health Organization (WHO).

Health Canada and the Nova Scotia Department of Environment and Labour (NSDEL) recommend that every homeowner test their residence for radon regardless of where they live. Since radon is a heavy gas, the lowest lived-in area of your home (such as a bedroom or recreation room in a finished basement) is the best place to test. A short-term test may last anywhere from 2 to 7 days while a long-term test can last from three months to one year. Since radon concentration is known to vary widely from day to day and season to season, the longer the test period, the more accurate your results will be for estimating an annual average.

If the radon level is deemed to be unacceptably high, there are many different options for reducing the concentration of radon gas in your home. Some of these options include additional ventilation within the home, the addition of an air exchange unit, sealing cracks in basement floors and walls, sealing pipes entering (well water) or exiting (sewage) a dwelling, or installation of a sub-slab depressurization system.

So, should we worry here in Nova Scotia? There is some cause for concern because areas of elevated radon concentrations are known. A simple and inexpensive test in your home, however, will be sufficient to determine whether radon levels exceed the national guideline. If so, the radon level can be significantly reduced in your home by a number of relatively inexpensive measures (such as ventilation).

To find out more about radon, visit the Health Canada or NSDEL web sites or do a search of the World Wide Web under the keyword radon, where there is a wealth of information available to the general public. Particularly good sites for radon information are the Environmental Protection Agency (EPA) site in the United States and the Radiation Protection Institute of Ireland (RPII). The following web site is maintained by the Nova Scotia Department of Environment and Labour and provides specific information for Nova Scotians: http://www.gov.ns.ca/enla/airlandwater/radon.asp.

Terry Goodwin

Special Note

Economic Geology Series ME 2007-1
Bedrock aggregate development potential in western Halifax Regional Municipality, by G. Prime and F. J. Bonner, is now available in the DNR Library, Halifax. The report comprises 56 pages and includes two pocket maps at a scale of 1:35 000. Cost is $25.

Dates to Remember

May 14-17, 2007
Canadian Society of Petroleum Geologists Annual Convention, Round Up Centre and AEUB Core Research Centre, Calgary, Alberta. For more information visit the web site: www.cspg.org.

May 23-25, 2007
Geological Association of Canada-Mineralogical Association of Canada Joint Annual Meeting, Yellowknife, Northwest Territory. For more information visit the meeting web site: www.nwtgeoscience.ca/yellowknife2007.

June 14 and 15, 2007
Mining Society of Nova Scotia, Annual General Meeting, Dundee Resort, Richmond County, Nova Scotia. Theme: Mining in Nova Scotia - In Support of a Rich Diversity. For more information contact George Sigut at 902-567-2147.

August 16-19, 2007
Nova Scotia's Gem & Mineral Show, Lion's Recreation Centre, Western Ave., Parrsboro, Nova Scotia. For more information visit the web site http://museum.gov.ns.ca/fgm/mineralgem/show.html.

November 13 and 14, 2007
Mining Matters for Nova Scotia 2007, Westin Nova Scotian Hotel, Hollis Street, Halifax, Nova Scotia. For more information contact Paul Smith at 902-424-2526 or visit the Mineral Resources Branch web site (http://www.gov.ns.ca/natr/meb).